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**QUICK APPLICATION/RELEASE NUT WITH ENGAGEMENT INDICATOR
(COMMERCIAL APPLICATION OF AN INNOVATIVE NUT DESIGN)**

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ABSTRACT

This is an assembly which permits a fastener to be inserted or removed from either side with an indicator of fastener engagement. The nut has a plurality of segments, preferably at least three segments, which are internally threaded, spring-loaded apart by an internal spring, and has detents on opposite sides which force the nut segments into operative engagement with a threaded member when pushed in and release the segments for quick insertion or removal of the fastener when moved out. When the nut is installed, end pressure on the detents presses the nut segments into operative engagement with a threaded member where continued rotation locks the structure together with the detents depressed to indicate positive locking engagement of the nut. On removal, counterclockwise rotation relieves the endwise pressure on the detents permitting internal springs to force the detents outward and allowing the nut segments to move outward and separate to permit quick removal of the fastener.

INTRODUCTION

Conventional nuts for fastening objects together have the disadvantage of requiring a large number of turns to position them in a fully locked position. This may also involve the application of a considerable amount of torque. Mechanical operations in space, i.e., at low gravity, encounter problems which do not exist on earth. For example, when one applies torque, as in tightening a threaded nut or joint, a countertorque is encountered against the worker (Newton's third law) which tends to rotate the worker around the object being torqued.

It is the object of this nut to provide a system that allows quick insertion and removal of a fastener system in those cases where time and cost is a major factor. Such as, oil and chemical applications where the thread form may be corroded or contaminated so that removal of a nut is time consuming and potentially costly.

The nut incorporates a positive locking system, which provides for guaranteed thread engagement, at specified depth of thread, for cases where thread engagement is critical to continued operations.

The nut incorporates for positive lock indication which provides for a visual check that the part is fastened properly.

The nut can be used freely or mounted to an object.

The fastener or nut may be inserted and torqued with the torque wrench, saving time and effort to first run the fastener down and then changing wrenches, or, if the torque wrench is used to run down the fastener, it saves on wear of the expensive torque wrench.

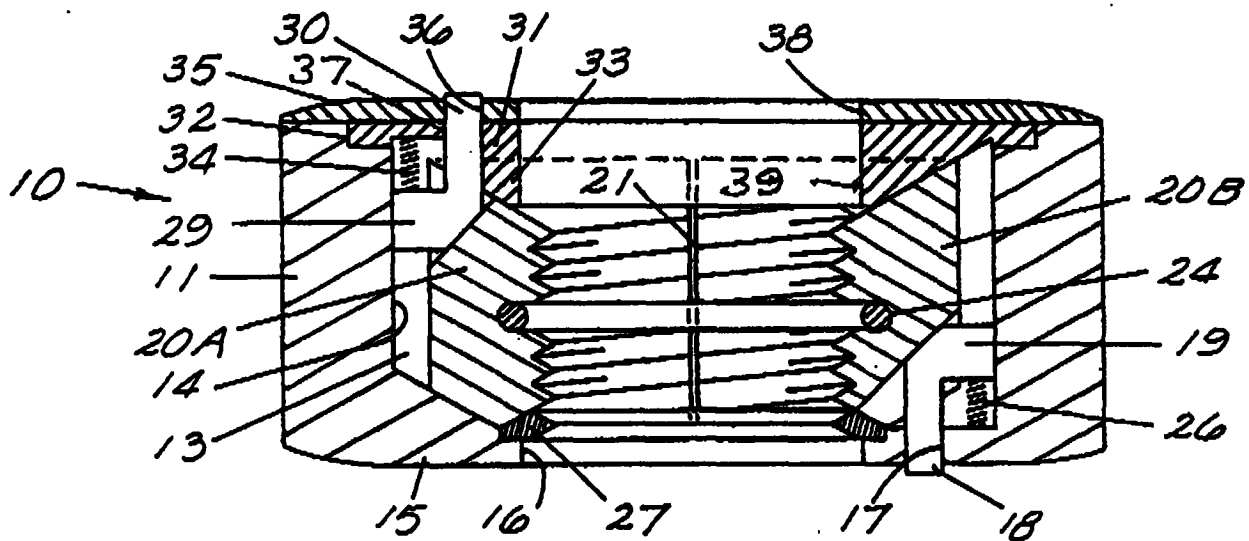


FIG. 1 is a sectional view, on the section line 1 - 1 of FIG. 2, of a quick application/release nut illustrating a preferred embodiment of this invention.

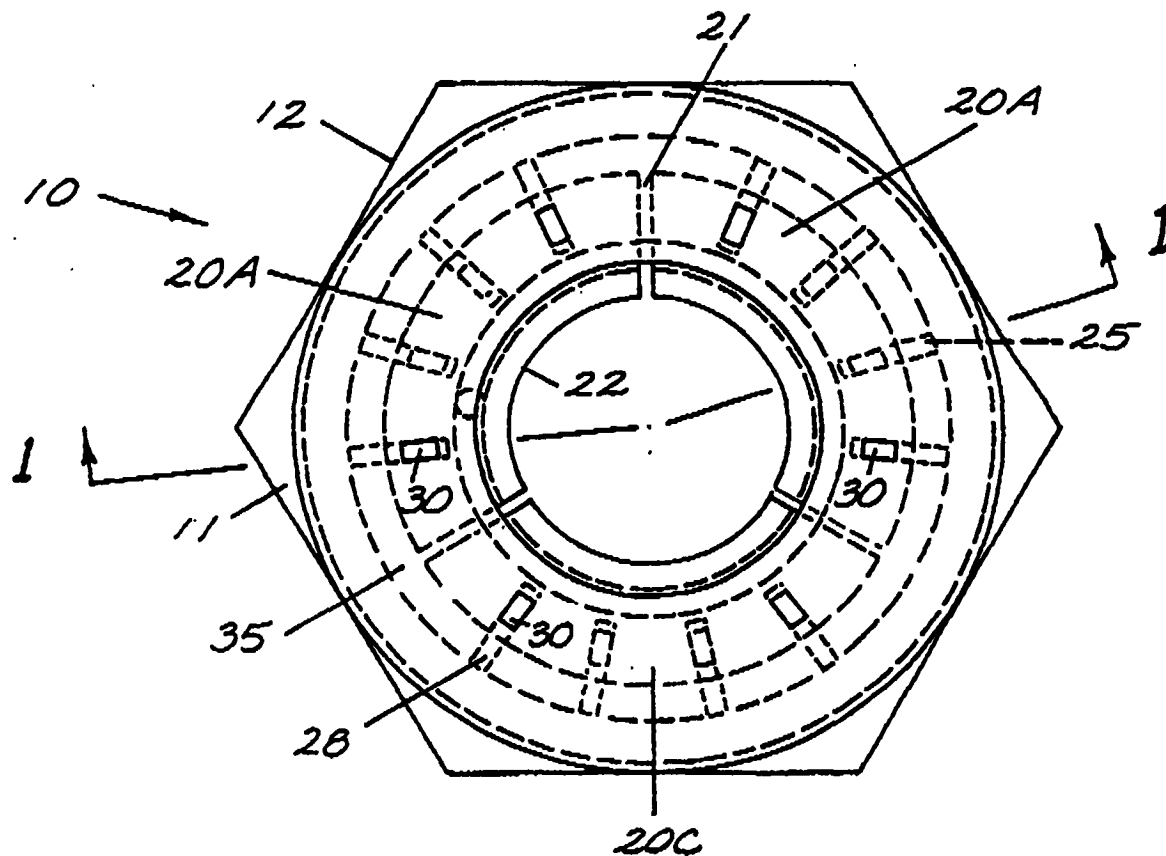


FIG. 2 is a top plan view of the nut shown in FIG. 1.

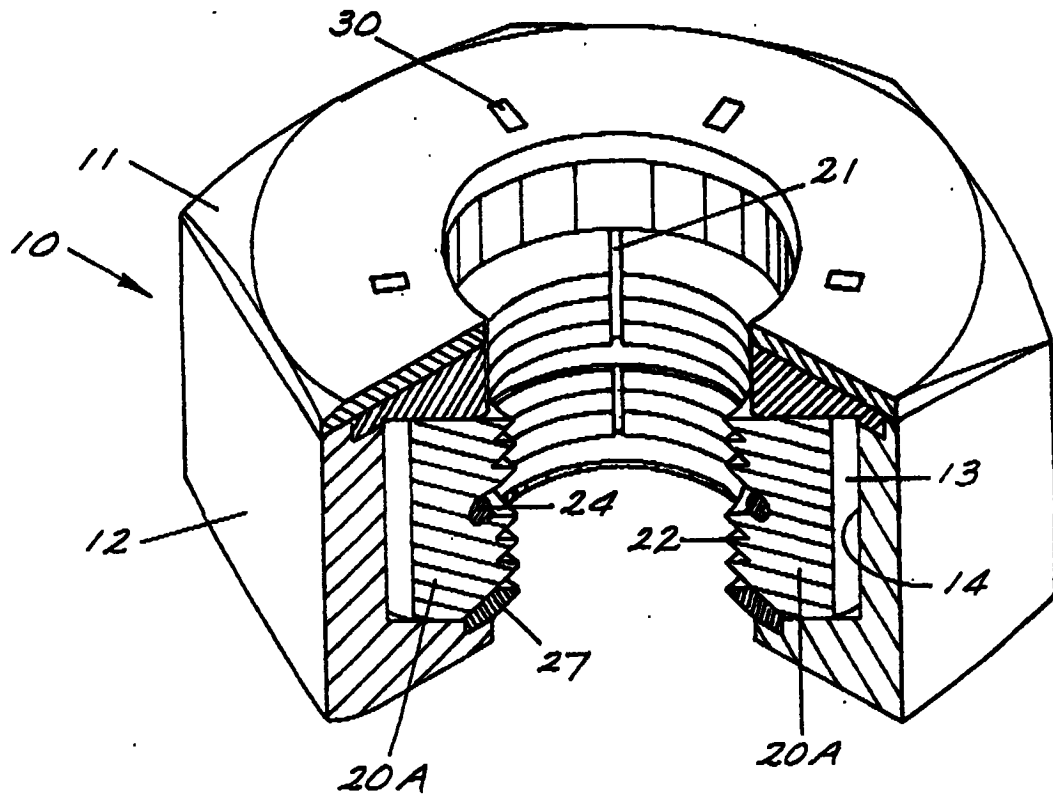


FIG. 3 is a front isometric view in partial section of the nut shown in FIG. 1.

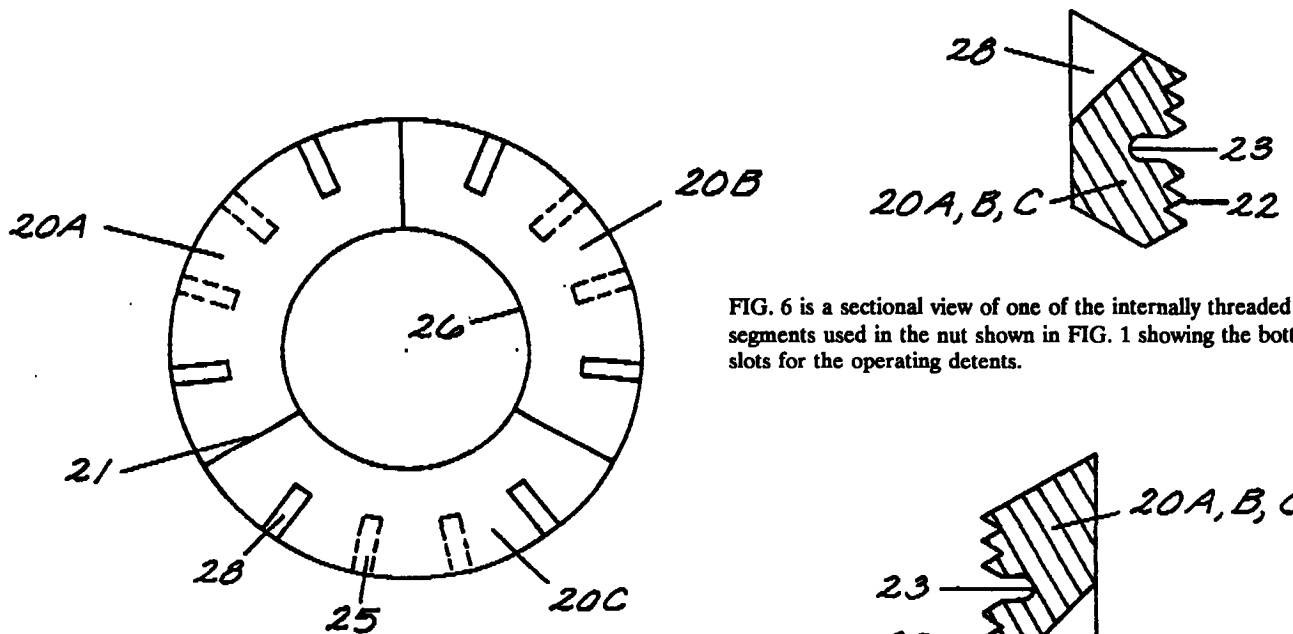


FIG. 4 is a top plan view of the multiple internally threaded segments used in the nut shown in FIG. 2.

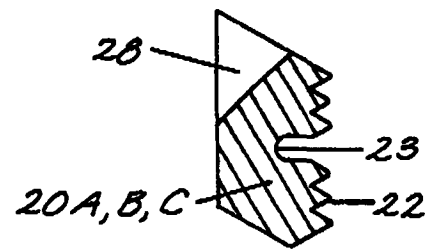


FIG. 6 is a sectional view of one of the internally threaded segments used in the nut shown in FIG. 1 showing the bottom slots for the operating detents.

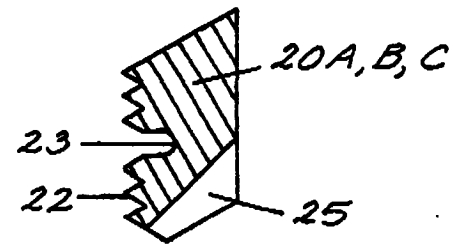


FIG. 5 is a sectional view of one of the internally threaded segments used in the nut shown in FIG. 1 showing the top slots for the operating detents.

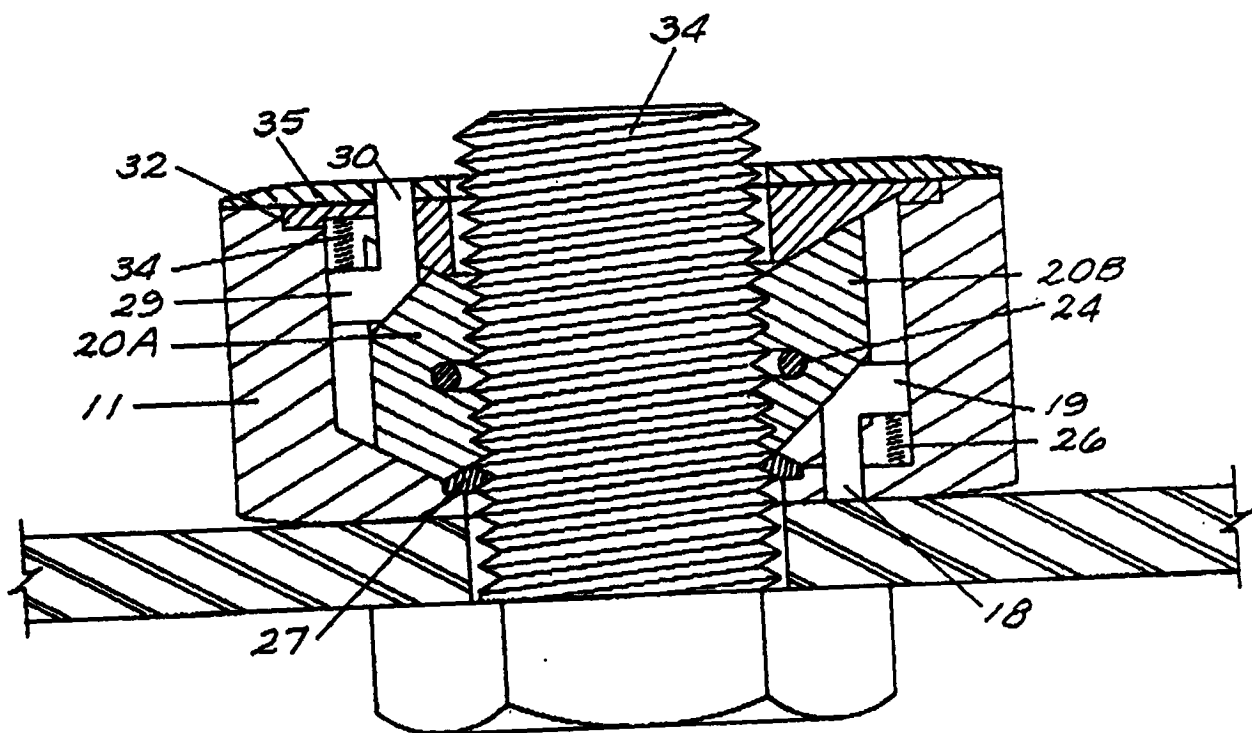


FIG. 7 is a sectional view, in longitudinal central section with a bolt or threaded shaft or spindle inserted from one side of the nut.

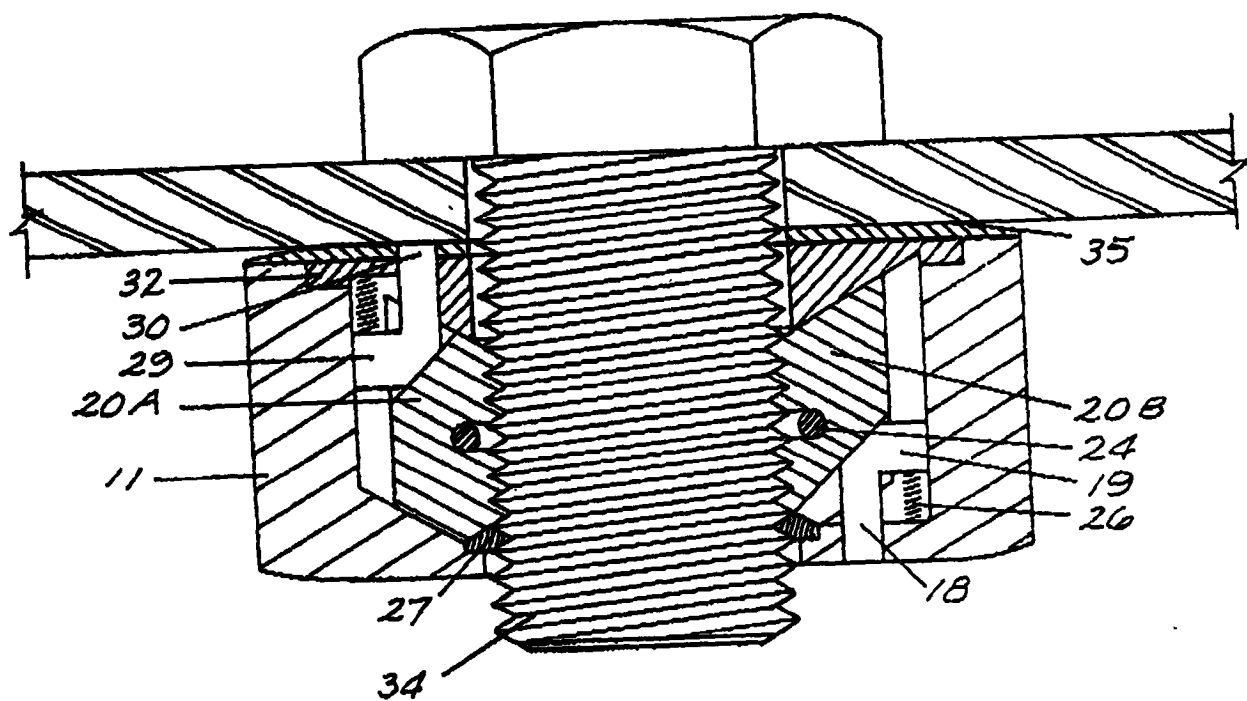


FIG. 8 is a sectional view, in longitudinal central section with a bolt or threaded shaft or a spindle inserted from another side of the nut.